Approved For Release 2006/10/19 : CIA-RDP86-00800R000100020068-1

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29 December 1961

MEMORANDUM FOR: Chief, Utilities Engineering Branch/RECD/OL

25X1 FROM : [redacted] Elec. Engr.

SUBJECT : Survey of Conversion to Cold Cathode Lighting from Incadescent Lighting [redacted] 25X1

1. Total area to be converted is approximately 3,530 sq. ft. This includes rooms 1, 4, 5, 7, 8, 9, 11, and 13.

2. It is assumed that present level of illumination in these areas is 50 foot candles. For direct incadescent fixtures this level of illumination would require 10 watts/square foot. For semi-direct cold cathode fixtures this level of illumination would require 5 watts/square foot.

3. Initial Cost of Installing Cold Cathode fluorescent fixtures. Fixture type-4 lamps/fixture, 96 inch, 2300 lumens. For a lighting level of 50 foot candles required square feet per fixture is 100, therefore 40 fixtures will be required

Net cost of one fixture	$45.00
Installation and added wiring	25.00
Net initial lamp cost	12.00
Total initial cost per fixture	$82.00

4. Energy Consumption and Cost. Assume that the lamps are operated 12 hours per day for 365 days equivalent to 4400 hrs per yr. The energy consumed is 10 watts for incadescent and 5 walls for cold cathode fixtures per sq. ft. of floor area. Cost of energy at station is around 1½ cents/kwh.

Incandescent fixtures
3530 sq. ft. X 10 watts equals 35,300 watts/hr.
35,300 watts X 4400 hrs equals 155,320 KWH
155,320 KWH X .015 equals $2,329.80/yr.

Cold Cathode fixtures
One-half the above equals $1,164.90/yr.

Saving in energy costs equals $1,164.90/yr.

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5. Maintenance Costs. Rated life of lamps is 1000 hrs for incandescent lamps and 25,000 hrs. for cold cathode tubes.

Incandescent -(100 lamps)-annum
4 changes per 4400 hr/year.
400 X .50 ea. X .40 (labor) equals $360.00

Cold Cathode -(forty 4 lamp fixtures)-annum:
Life of 5 yrs. plus cleaning twice/year.
(160 X1/5 X $2.90)plus (160 X 2 X .40) equals $220.80
Ballast replacement per fixtures
40 X 1/5 X (6.00 ea. plus 1.20 labor) equals 57.60
Total $278.40

6. Total Operating Cost/year - Energy plus maintenance cost.

Incandescent	$2329.80 plus 360.00 equals	$2698.80
Cold Cathode	$1164.90 plus $278.40 equals	$1443.30
	Differential	$1255.50

7. Installation cost of Cold cathode fixtures
40 fixtures X $2.00 equals $3,280.00
Removal of Incandescent fixtures $300.00
Total cost $3580.00

8. Calculation of Air Conditioning Required for lighting load.

1 Kilowatthour equals 3414 BTU
BTU generated per hour equals lighting Kilowatts X 3414

Tons of AC required equals $\frac{\text{BTU/hr}}{12000}$

Incandescent equals $\frac{35 \times 3414}{12000}$ 10 tons

Cold cathode equals [illegible] 5 tons

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